We claim:

1. A method of restoring or enhancing insulin sensitivity in a cell comprising upregulating IRS2 function.

2. A method of restoring or enhancing pancreatic β-cell function comprising upregulating IRS2 function.

3. A method of treating a disease characterized by reduced or insufficient signaling through IRS2 comprising upregulating IRS2 function.

4. The method of Claim 3, wherein the disease is a metabolic disease.

5. The method of Claim 3, wherein the disease is diabetes.

6. The method of Claim 3, wherein the disease is obesity.

7. The method of Claim 3, wherein the disease is female infertility.

8. The method of Claim 3, wherein the disease is a central nervous system disorder.

9. The method of any of Claims 1-3, wherein the upregulation of IRS2 function comprises activation of IRS2.

10. The method of any of Claims 1-3, wherein the upregulation of IRS2 function comprises activation of a dimeric or multimeric complex that includes IRS2.

11. The method of Claim 10, wherein the complex further includes a tyrosine kinase receptor or an SH2 domain containing protein.

12. The method of any of Claims 1-3, wherein the upregulation of IRS2 function comprises inhibition of phosphorylation of carboxy terminal serine residues of IRS2.

13. The method of any of Claims 1-3, wherein the upregulation of IRS2 function comprises enhanced expresssion of IRS2.

14. The method of any of Claims 1-3, wherein the upregulation of IRS2 function comprises inhibition of degradation of IRS2.

15. The method of any of Claims 1-3, wherein the upregulation of IRS2 activity comprises specifically enhancing interaction between IRS2 and an IRS2 binding partner selected from the group consisting of 14-3-3, pin1, a protein kinase C isoform, a protein kinase B isoform, Tor kinase, Jnk1, and an SH2 domain comprising protein.

16. A method of determining whether a small molecule is an activator or an inhibitor of IRS2 which comprises:

a) providing a Test Cell which overproduces IRS2 and exhibits an increase in binding of an IRS2-binding protein to IRS2, relative to a Control cell which produces IRS2 at a lower level, or does not produce the protein at all, and which exhibits a lesser amount of binding of said protein to IRS2;

b) causing the small molecule to come into contact with the intact Test Cell;

c) measuring the amount of the IRS2 binding protein bound to IRS2.

17. A method of identifying a small molecule capable of increasing the level of expression from an IRS2 promoter in a mammalian cell which comprises:

a) providing a Test Cell which contains said IRS2 promoter operably linked to a reporter gene such that increased expression of the IRS2 promoter sequence using a substance known to be capable of upregulating the endogenous IRS2 gene results in an increase in reporter protein levels;

b) causing said small molecule to come into contact with the intact Test Cell, and

c) determining whether an increase in reporter protein level in the Test Cell has occurred.